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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/718,931

11/20/2003

Kun-Seok Lee

8021-191 (SS-17862-US)

3157

22150 7590 06/09/2008
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EXAMINER

GHEBRETINSAE, TEMESGHEN

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

06/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|---|--------------------------------------|--|
| Office Action Summary | Application No. 10/718,931 | Applicant(s) LEE, KUN-SEOK | |
| | Examiner Temesghen Ghebretinsae | Art Unit 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9,16 and 17 is/are rejected.
- 7) ☒ Claim(s) 3-8,10-15,18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oh in view of Jelonnek (6,577,259).

4. Oh discloses a sigma delta modulator comprising: a plurality of operation units for adding input values to internal feedback values and for successively accumulating the added values up to a forth order.(214); a quantizer for quantizing an accumulated values output from a last one of the plurality of operation units into a plurality of bits (220); and a plurality of multipliers for outputting feedback coefficients as internal feedback values to each of the plurality of the operation units, wherein the feedback coefficients are determined according to a quantized level corresponding to the plurality of bits(212) see fig.2 and paragraph {0041-0042}.

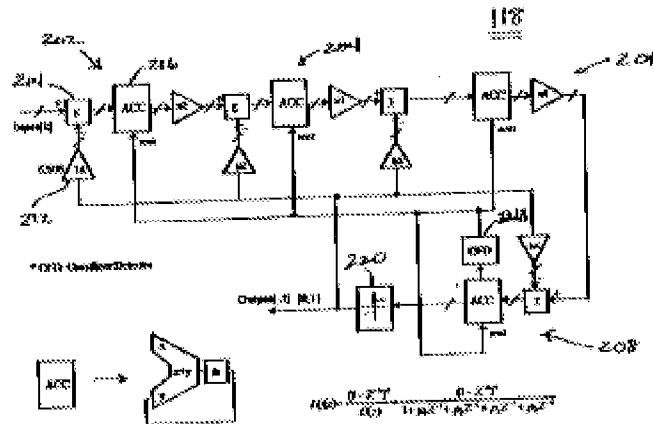


FIG. 2

5.

6. Oh differs from the claimed invention in that the delta-sigma modulator includes single bit quantizer generating two levels. However, Jelonnek disclose a sigma delta modulator with multi bit quantizer for quantizing an accumulated value. Oh and Jelonnek are analogues art because they are from the same field of endeavor of sigma-delta modulation. At the time of the invention it would have been obvious to one of ordinary skill in the art to implement the teaching of Jelonnek (multi-bit quantization) into Oh. The motivation/suggestion for doing so would have been to reduce the quantization noise. In communication art it is well known that multi-bit quantization reduces noise better than single- bit quantization.

Claim Rejections - 35 USC § 103

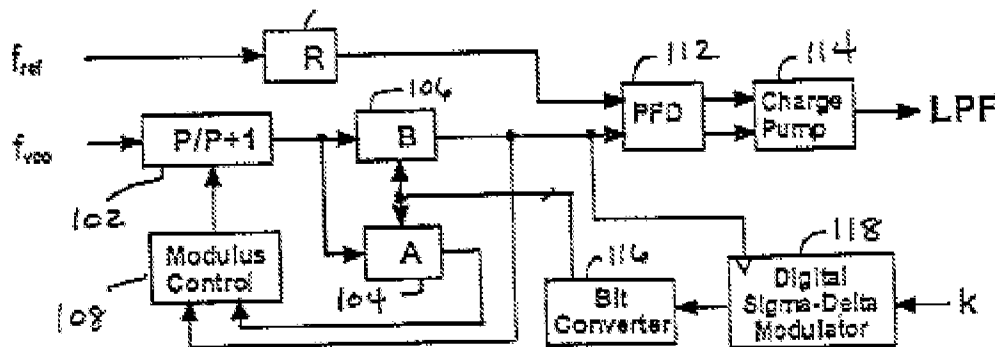
7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-2, 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh in view of Jelonnek (6,577,259).

9. Oh discloses a fractional frequency synthesizer comprising: a phase detector for detecting a phase difference between a reference signal and a feedback signal (112); a voltage controlled oscillator for receiving a phase difference control signal based on the detected phase difference (fvco is output from VCO not shown); a divider for selecting a value from at least plurality integers according to a predetermined selection signal, for dividing the frequency of the oscillated signal output from the voltage oscillator by the selected value, and for outputting a divided signals a feedback signal to the phase detector (102); a sigma-delta modulator (fig.2) for adding a predetermined input values to an internal feedback values (input(k) and output from 212), for successively accumulating added values (216) for quantizing an accumulated value to at least multi levels and for converting a quantized value into the predetermined selection signal .



10. Oh differs from the claimed invention in that the delta-sigma modulator includes single bit quantizer generating two levels. However, Jelonnek disclose a sigma delta

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modulator including multi-bit quantizer (4*) for quantizing an accumulated values to at least multi-levels. Oh and Jelonnek are analogues art because they are from the same field of endeavor of sigma-delta modulation. At the time of the invention it would have been obvious to one of ordinary skill in the art to implement the teaching of Jelonnek (multi-bit quantization) into Oh. The motivation/suggestion for doing so would have been to reduce the quantization noise. In communication art it is well known that multi-bit quantization reduces noise better than single-bit quantization.

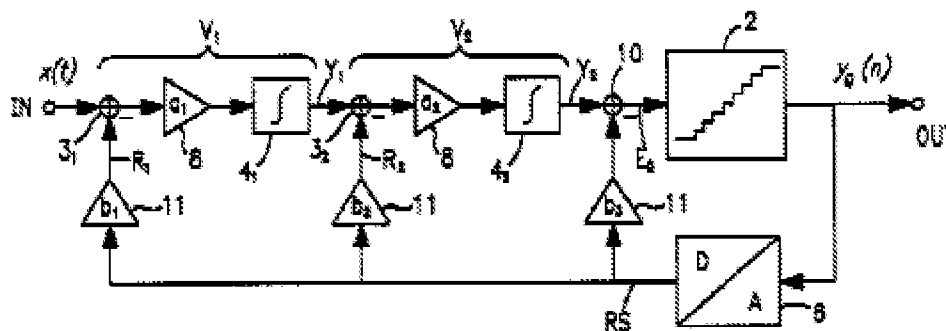


FIG. 1

11.

12. Oh also discloses a sigma delta modulator comprising: a plurality of operation units for adding input values to internal feedback values and for successively accumulating the added values up to a forth order.(214,216); a quantizer for quantizing an accumulated values output from a last one of the plurality of operation units into a plurality of bits (220); and a plurality of multipliers for outputting feedback coefficients as internal feedback values to each of the plurality of the operation units, wherein the feedback coefficients are determined according to a quantized level corresponding to

the plurality of bits(212) see fig.2 and paragraph {0041-0042}. As claimed in claims 2 and 17.

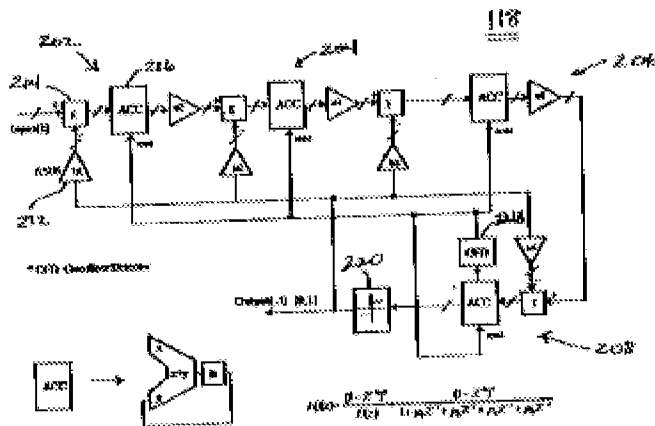


FIG. 2

Allowable Subject Matter

13. Claims 3-8, 10-15, 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

14. Applicant's arguments, see page 8 and 9, filed 2/22/08, with respect to the rejection(s) of claim(s) 1-2, 16-17 and 9 under 102/103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Oh (2002/0145472) and Jelonnek (6,577,259). See above rejection for detail.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Temesghen Ghebretinsae whose telephone number is 571-272-3017. The examiner can normally be reached on Monday-Friday from 8 to 6. The examiner can also be reached on alternate.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammed, can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Temesghen Ghebretinsae
Primary Examiner
Art Unit 2611

/Temesghen Ghebretinsae/

Primary Examiner, Art Unit 2611

6/5/08 PK